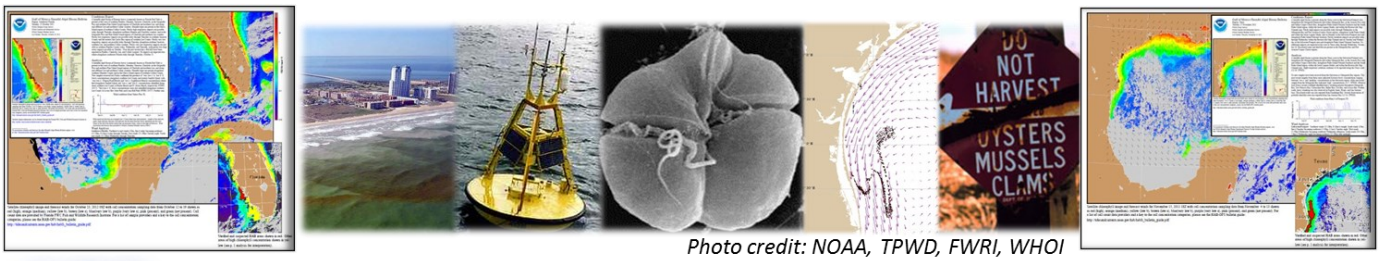

Photo credit: NOAA, TPWD, FWRI, WHOI

Issue 16 June 2016

NOAA HAB-OFS Newsletter

Welcome to the NOAA HAB-OFS Quarterly Newsletter. We are always happy to hear from you so please send your topic suggestions, questions, comments and feedback to hab@noaa.gov.

In this issue:

Transitioning the Lake Erie HAB Bulletin to Operations

For over a decade, the HAB Operational Forecast System (HAB-OFS) has provided the only NOAA-issued operational ecological forecasts for the Gulf of Mexico, and now the HAB-OFS is planning to grow. Over the next year, NOAA will be transitioning the Lake Erie HAB forecasts to operations.

What does "operational" mean? NOAA defines "operations" as "sustained, systematic, reliable, and robust mission activities with an institutional commitment to deliver specified products and services". In other words, operational products are beneficial because they are dependably delivered on schedule and meet standards developed through scientific research and discussion with stakeholders.

Why operationalize forecasts for Lake Erie? Blooms of the cyanobacteria are a recurring problem there, and recent bloom events have caused significant impacts. You may have heard about the toxic bloom that on August 2, 2014 contaminated the water supply, leaving more than 400,000 people in Toledo, OH without drinking water for over 48 hours as public water suppliers applied treatments to remove the toxins from the water[1]. Beyond the impact of water contamination, both toxic and non-toxic blooms can form surface scums resulting in millions of dollars in impacts on property values, regional tourism, beach recreation, and recreational and commercial fishing each year[2].

Since 2008, NOAA's National Centers for Coastal Ocean Science (NCCOS) has issued the Lake Erie HAB-FS Experimental HAB Bulletins as a demonstration. The bulletins are disseminated semi-weekly during the HAB season and used by coastal resource managers, public water suppliers and public health officials to respond to and mitigate the impacts of cyanobacterial blooms. The information provided enables public water suppliers to shut down lake water intake systems when a cyanobacterial bloom may be present nearby to prevent the contamination of the drinking water supply. The bulletins also provide the general public with actionable information which they can use to find unaffected areas for boating or other commercial and recreational activities. Making these semi-weekly forecasts operational is of major importance to the region because it will ensure their continued reliability and scientific rigor long into the future.

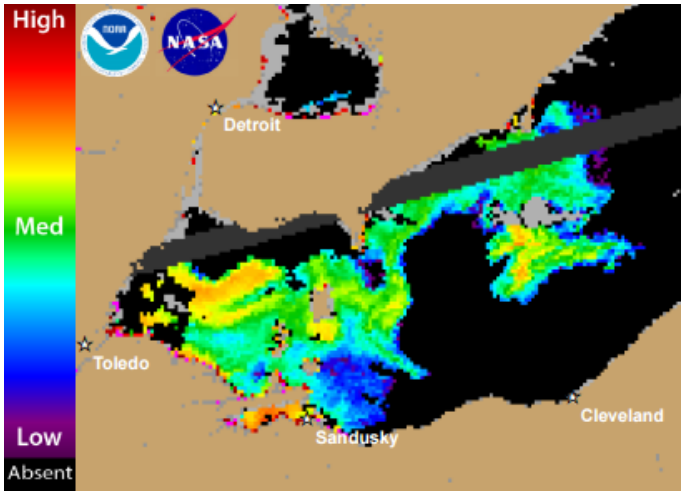

Figure 1. *Cyanobacterial Index from NASA's MODIS- Aqua data collected August 28, 2015 .*

The transition to operations at CO-OPS is currently underway. The goal is to make the transition as seamless as possible for the users. Those who are already accustomed to the existing experimental Bulletins will find that the content is similar, but behind the scenes the service provided will be more robust.

As part of the transition, the operational infrastructure is currently being set-up, and during the 2016 bloom season (which typically begins in July) NCCOS will continue to issue the bulletins while CO-OPS works internally to test their ability to produce forecasts in parallel. The NCCOS

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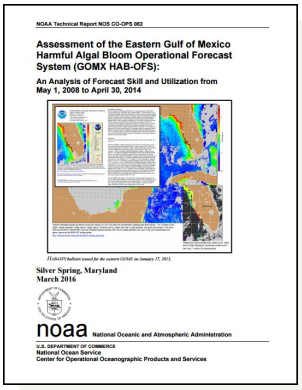
and CO-OPS forecasts will be compared throughout the HAB season, and then a decision will be made to declare the Lake Erie HAB-FS ready for operations. The goal is to have CO-OPS begin issuing operational Lake Erie HAB Bulletins in the 2017 bloom season. Once operational, the forecasts will be assessed and continued improvements will be made systematically based on the operational needs identified by the assessments and emerging scientific research. In addition, the lessons learned from the Lake Erie transition will be used to streamline the process for future HAB forecasts presently in development.

1. Basulto, D. (2014, August 5). In the wake of Toledo, we need innovations to prevent a world water crisis. *The Washington Post*. Retrieved May 16, 2016, from https://www.washingtonpost.com/blogs/innovations/wp/2014/08/05/in-the-wake-of-toledo-we-need-innovations-to-prevent-a-world-water-crisis
2. International Joint Commission. (2014). *A Balanced Diet for Lake Erie: Reducing Phosphorus Loadings and Harmful Algal Blooms*. Lake Erie Ecosystem Priority. Retrieved May 16, 2016, from http://www.ijc.org/files/publications/2014%20IJC%20LEEP%20REPORT.pdf


NOAA Technical Report NOS CO-OPS 082

Assessment of the Eastern Gulf of Mexico Harmful Algal Bloom Operational Forecast System (GOMX HAB-OFS):

An Analysis of Forecast Skill and Utilization from May 1, 2008 to April 30, 2014

Silver Spring, Maryland
March 2016

noaa National Oceanic and Atmospheric Administration

U.S. DEPARTMENT OF COMMERCE
National Ocean Service
Center for Operational Oceanographic Products and Services

HAB-OFS Publishes NOAA Technical Report for Florida, 2008-2014

The HAB team is pleased to announce the publication of our most recent NOAA technical report, detailing the results of an evaluation of HAB-OFS bulletins issued for Florida, entitled "Assessment of the Eastern Gulf of Mexico Harmful Algal Bloom Operational Forecast System (GOMX HAB-OFS) from May 1, 2008 to April 30, 2014".

You can find a summary of the report in the September 2015 issue of our HAB-OFS newsletter. The results of this assessment will be used to guide enhancements to the operational forecast system with the goal of improving forecast quality through increased scientific understanding and the refinement of current forecast models.

To request a paper copy, please contact us at hab@noaa.gov.

HAB-OFS Team Attends 4th Ecological Forecasting Roadmap Meeting

From April 26th through 28th the HAB-OFS team attended the 4th Annual Ecological Forecasting Roadmap (EFR) meeting in College Park, MD. NOAA's EFR identifies four forecasting focal areas: harmful algal blooms, pathogens, hypoxia, and habitat science. This year's meeting focused on the challenges of transitioning experimental research projects into sustainable operational products. The meeting was attended by representatives from NOAA, EPA, USDA, IOOS, and NASA, as well as state governments and academic institutions involved in developing ecological forecasting tools and services, showing just how far Ecological Forecasting (EF) has advanced in four short years. Highlighting this fact, the meeting was attended by the Assistant Administrators of five NOAA Line Offices (the National Ocean Service, the National Weather Service, the Office of Oceanic and Atmospheric Research, the National Environmental Satellite, Data, and Information Service, and the National Marine Fisheries Service and NOAA Chief Scientist Dr. Spinrad, each of whom delivered opening remarks at the conference demonstrating strong support for the EFR from NOAA leadership.

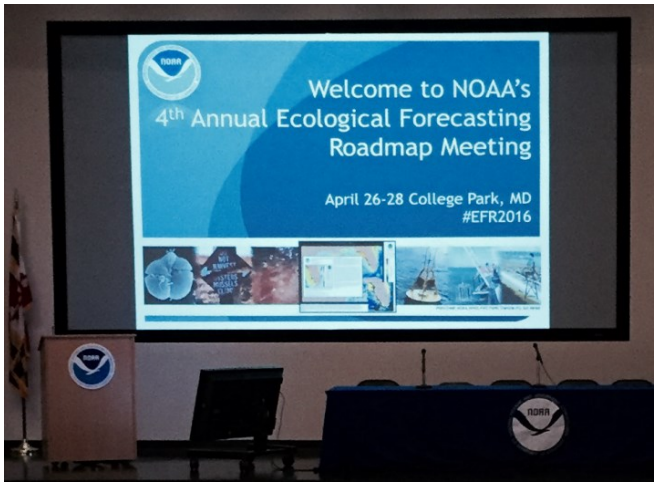


Figure 2. *Opening remarks for the 4th Annual Ecological Forecasting Roadmap meeting held at the NOAA Center for Weather and Climate Prediction in College Park, MD.*

The first day of the meeting included presentations from EF users, success stories from EF programs over the previous year, and lessons learned from each of the participating Line Offices. The second day dissected the research to operations process (R2O), a difficult process where experimental projects are scaled up into operational products with a NOAA commitment to sustain that quality service. The second day also dedicated time to constructing the vision for the future of the EFR. On the third and final day of the meeting, the teams for each EF focal area held breakout sessions in which they dove into specifics of each program to diagram inter-office collaboration for the year to come. This year's meeting made it clear that the transition process is the most difficult step across the EFR portfolio, and the HAB-OFS is looked to as an example. Not only does the transition and maintenance of the Gulf of Mexico HAB forecasts to operations provide lessons learned, but the planned transition of the Lake Erie HAB forecasts in the coming year is touted as a major EFR accomplishment.

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The HAB-OFS team concluded this year's 3-day meeting with a good strategy for the future, and the discussions and collaboration during this year's meeting will be helpful for advancing the overall EFR portfolio. For more information on the Ecological Forecasting Roadmap, and how it applies to forecasting HABs in the Gulf of Mexico and Lake Erie, NOAA's Ecological Forecasting Services webpage.

Bloom in Southwest Florida Finally Dissipates

In our last HAB-OFS Newsletter (March 2016), we reported that bloom concentrations alongshore southwest Florida appeared to be dissipating. With only sparse 'background' to 'very low' *Karenia brevis* concentrations detected through the end of March along Pinellas, Manatee, and Monroe counties, full bloom termination was likely in sight. However, the bloom had a different plan!

Blooms often drift southward along the coast of southwest Florida, taking a brief respite offshore the Keys, before they drift off to presumably die a relaxing death in the warm Gulf waters. However, this year, the bloom decided to alter its route, taking a sharp left after visiting Pavilion Key and heading north once again with the ocean currents. After fooling us into a false sense of bloom termination in mid-March, 'very low' to 'medium' *K. brevis* concentrations began popping up in samples along Pinellas, Manatee, Charlotte, and Lee counties once again in late March. Moving into April, the bloom took up real estate from Pinellas to Lee counties, with up to 'high' *K. brevis* concentrations and respiratory irritation reported in several areas. Concentrations once again were slow to decrease through April, with only a few lingering 'background' to 'very low' concentrations remaining alongshore and within the bay regions of northern Sarasota right up through the 19th of May.

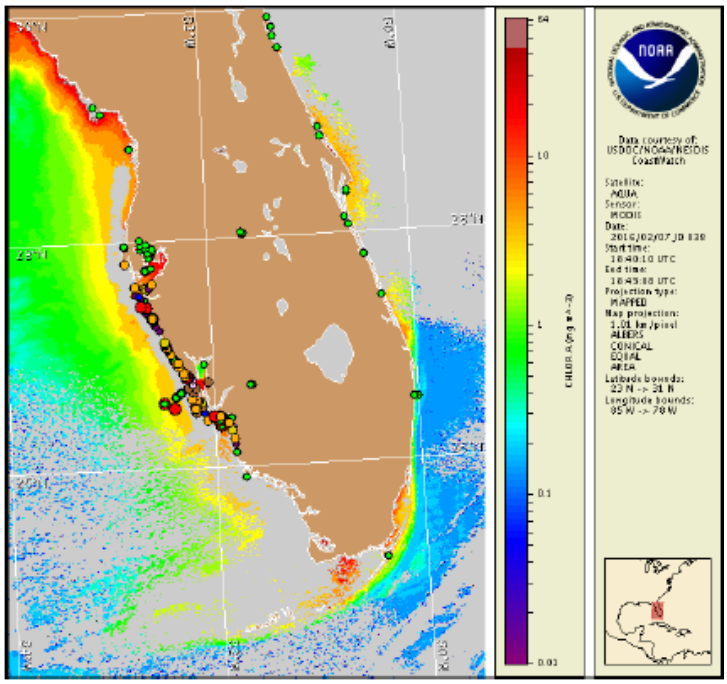

Figure 3. *Image from the February 8 southwest Florida bulletin showing the extent of Karenia brevis distribution along the coast.*

While the typical bloom season is usually August through December, blooms have started as early as late June and July and can often linger into the spring. However, it's rare that a bloom continues right up until Memorial Day. In fact, over the past 12 years of HAB-OFS forecasting in southwest Florida, blooms have lingered into May during only two other seasons. The first of these was the first operational season in 2004, when bloom activity persisted from October 2004, through 2005, and into April 2006. This timeframe also saw blooms in both northwest and east Florida. The 2009-2010 bloom year also saw a bloom form in October, persisting along the coast before dissipating near the Florida Keys in May.

In time for the beginning of summer, you can finally breathe a deep sigh of relief at your favorite Florida beaches. Meanwhile, state and local agencies, along with NOAA, will continue to monitor conditions and make preparations for the next bloom.

Many Thanks to our Partners and Data Providers

http://tidesandcurrents.noaa.gov/hab/contributors.html

This newsletter was written and designed by:

NOAA/National Ocean Service

Center for Operational Oceanographic Products and Services (CO-OPS)

National Centers for Coastal Ocean Science (NCCOS)

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